



RINA

SINCERT

UNIVERSITÀ DI TORINO

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WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

N. 10TA00036PO3/A

Manufacturer **M & G METALMECCANICA sas - Torrecuso (Bn)**

WPQR No. **03/010**

Dated **21/04/2010**

Manufacturer's welding procedure (WPS) No. **03/010**

Dated **22/03/2010**

RANGE OF APPROVAL

Welding process	<b>135</b>	Type	<b>Partly mechanized</b>
Joint type	<b>Plates and Pipes BW ssnb-ssmb-bs/FW</b>		
Single/Multiple pass	<b>Single</b>		
Parent material group(s)	<b>I-1 (Subgroup 1.1 only)</b>	ISO/TR 15608	
	with a specified minimum yield strength $\leq$ 275 Mpa		
Parent material thickness (mm)	<b>Butt Joint - 1.05 to 1.95</b>	<b>Fillet Joint <math>t_1 = 1.05</math> to 3.0</b>	<b><math>t_2 = 1.05</math> to 3.0</b>
Throat thickness (mm)	<b>1.13 to 2.25</b>		
Weld deposit thickness (mm)	<b>1.05 to 1.95</b>		
Outside diameter (mm)	<b>Over 150 (PA-PB-PC); Over 500 (other qualified positions)</b>		
Filler metal type	<b>Solid wire EN ISO 14341-A: G3 Si1</b>		
Shielding gas (ISO 14175)	<b>M21 with max. CO2 % = 21.6</b>	Backing gas (ISO 14175)	<b>N.A.</b>
Type of welding current	<b>DCEP</b>	Heat input Kj/cm	<b>All</b>
Welding position	<b>All, vertical down excluded</b>		
Preheat min. (°C)	<b>None</b>	Interpass temp. Max. (°C)	<b>N.A.</b>
Post weld heat treatment / Ageing	<b>None</b>		
Other information	<b>-</b>		

Welders name **PROCACCINI Francesco**

Stamp No. **PF**

Welding test conducted by **M & G METALMECCANICA sas - Torrecuso (Bn)**

Mechanical test conducted by **TECNOLAB srl - Civitavecchia (Rm)** Laboratory test No. **178** dated **21/04/2010**

At presence of RINA Surveyor **D. Eranio**

We certify that statements in this certificate are correct and that the test welds were prepared, welded and tested in accordance with the requirements of **UNI EN ISO 15614-1: 2008** Standard

Issued at: Genova

on 16 June 2010



RINA Services S.p.A.

**JOINT DETAILS AND WELDING SEQUENCES**

SQUARE EDGE BUTT JOINT; ONE SIDE WELDING, WITHOUT BACKING.

Pass No.	Process	Filler metal diam. (mm)	Filler metal classification	Amps	Volt	Travel speed (cm/min)	Heat input (kJ/cm)	Other
1	135	0.8	EN ISO 14341-A	65	18	28	2.0	-

**PARENT MATERIAL**

Material specification	EN 10025-2:2005		
Type or grade	S275JR		
Group(s)/Subgroup(s) No. (ISO/TR 15608)	1.1		
Thickness (mm)	1.5	Throat thickness (mm)	N.A.
Diameter (mm)	N.A.		
Branch connection angle	N.A.		
Other	-		

**WELDING CONSUMABLES**

Process	135		
Trade name(s)	SPIRA FERRO		
Specification	EN ISO 14341-A		
Classification / designation	G3 Si1		
Size (mm)	0.8		
Deposited metal thickness			
Groove	1.5 mm		
Throat	N.A.		
Flux trade name	N.A.		
Consumable insert	N.A.		
Other	-		



<b>GAS</b>			
	Gas	Mixture	Flow rate (l/min.)
Shielding	-	<b>Argon 82% + CO2 18%</b>	<b>18</b>
Trailing	None	-	-
Backing	None	-	-

<b>POSITION</b>	
Welding position	<b>PA</b>
Other	-

<b>PREHEAT</b>		<b>POSTWELD HEAT TREATMENT</b>	
Preheat temperature	<b>15 °C min.</b>	Temperature	<b>None</b>
Interpass temperature	<b>N.A.</b>	Time	<b>N.A.</b>
Other	-	Other	-

<b>ELECTRICAL CHARACTERISTICS</b>			
Current	<b>DC EP</b>		
Ampere (range)	<b>See table</b>	Volts (Range)	<b>See table</b>
Mode of metal transfer	<b>Short arc</b>		
Tungsten electrode size and type	<b>N.A.</b>		
Other	-		

<b>TECHNIQUE</b>	
Travel speed (range)	<b>See table</b>
String or weave bead	<b>String</b>
Oscillation (*)	<b>N.A.</b>
Method of groove/edge preparation	<b>Machining/Grinding</b>
Interpass cleaning	<b>N.A.</b>
Method of back gouging	<b>N.A.</b>
Orifice or gas cup size	<b>18 mm</b>
Stand off distance (*)	<b>N.A.</b>
Multiple or single pass	<b>Single</b>
Multiple or single electrodes	<b>Single</b>
Torch angle (*)	<b>N.A.</b>
Other	<b>(*) for fully mechanized/robotic only</b>



TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	Area (mm <sup>2</sup> )	Total load (N)	R <sub>m</sub> (N/mm <sup>2</sup> )	Fracture location
TT1	12.20	1.40	17.08	121081	509	Base metal
TT2	12.15	1.45	17.61	122704	515	Base metal

BEND TEST		
Type	No.	Result
FACE TRANSVERSE	2 OFF	Acceptable
ROOT TRANSVERSE	2 OFF	Acceptable

## OTHER TEST

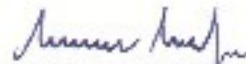
MACROGRAPHIC EXAMINATION      Acceptable  
 MICROGRAPHIC EXAMINATION      Not required

## NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION              Acceptable  
 RADIOGRAPHIC EXAMINATION      Acceptable  
 PENETRANT TEST                    Not required  
 MAGNETIC PARTICLE                Acceptable  
 ULTRASONIC TEST                  Not required

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